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State Methamphetamine Precursor Policies and Changes in Small Toxic Lab Methamphetamine Production

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STATE METHAMPHETAMINE PRECURSOR POLICIES AND CHANGES IN SMALL TOXIC LAB METHAMPHETAMINE PRODUCTION

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Domestic production of methamphetamine in small toxic labs (STLs) results in significant community safety and health consequences. This paper examines the effects of state-level policies implemented in the middle of the last decade in reaction to a rapid increase in STL labs. These policies focused on controlling access to the methamphetamine precursor chemicals ephedrine and pseudoephedrine and the relationship of such policies with actual STL seizure rates. Data include (a) primary legal research on state laws/regulations in all 50 states in effect as of October 1, 2005; and (b) STL seizure counts for 2004–2006. Results from random

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effects cross-sectional time-series regression models showed that states with the greatest reduction in STL seizures had comprehensive policies involving quantity limits on methamphetamine precursor purchases, clerk intervention requirements (such as requiring buyer identification) and regulatory agency specification for monitoring compliance and tracking multiple purchases. Criminalizing purchasing violations was not related to STL reductions.

Introduction

Research suggests that methamphetamine use relates to high risks of addiction and abuse (Anglin, Burke, Perrochet, Stamper, & Dawud-Noursi, 2000; Baucum, Rau, Riddle, Hanson, & Fleckenstein, 2004; National Institute on Drug Abuse [NIDA], 2006; Volkow et al., 2001), as well as sustained and increased general and violent criminal behavior (Cartier, Farabee, & Prendergast, 2006; Hansell, 2006; Sommers, Baskin, & Baskin-Sommers, 2006). Methamphetamine use has significant consequences for community safety and health, including increased levels of community violence (Kyle & Hansell, 2005) as well as increased risk of child neglect and abuse (Dube et al., 2003; Mecham & Melini, 2002) and associated removal of children from homes (Hansell, 2006; Kyle & Hansell, 2005). The production of methamphetamine has also proven to have significant public health consequences to communities, especially when produced in small toxic labs (STL). STL methamphetamine production combines key precursor chemicals such as pseudoephedrine and ephedrine (found in common cold medications) with hazardous and often volatile acids, solvents, metals or salts. STLs are generally defined as laboratories that produce one pound or less of methamphetamine per cooking cycle, and were estimated to provide approximately 20 percent of the United States (US) methamphetamine supply in 2006 (O'Connor, Chriqui, & McBride, 2006). Explosives are sometimes planted around STLs to protect the production unit, and violence is likely to be directed at law enforcement personnel who seize the lab (Scott & Dedel, 2006).

STL methamphetamine production often occurs in home environments where significant health consequences related to direct toxic chemical exposure and related fumes occur. Exposure can result in chemical burns and damage to the respiratory system as well as a wide variety of neurological and other health-related consequences for those who live in the environment, with children being particularly vulnerable to serious harms (Barr et al., 2006; Farst et al., 2007). Rates of child abuse and neglect are also heightened in STL environments. It is important to note that these health consequences can continue to affect the next residents of the home who may not be aware that methamphetamine was produced in the structure they buy or rent.

First responders (law enforcement, firefighters, emergency medical personnel, etc.) who participate in an STL seizure or respond to an explosion or fire at a

lab also are at high risk from the toxic compounds used in and resulting from methamphetamine production (Cooper et al., 2000; McFadden, Kub, & Fitzgerald, 2006). Further, there are continuing health consequences from contamination of the broader environment including soil, ground water, and any other material in or near the production site. Environmental contamination can result in long-term, on-going health consequences for those who come into contact with the contaminated environment and considerable local costs related to necessary clean-up efforts (Royal Canadian Mounted Police, 2001). Dobkin and Nicosia (2009) published a report summarizing methamphetamine production cost estimates in the US for 2005; they noted that methamphetamine production and use has market costs and consequences similar to those for other illegal drugs. However, methamphetamine has additional costs of toxic chemicals present in the production environment that result in considerable health and safety risks. Overall, their best estimate of costs in 2005 was $23,384,400.

Data from the Drug Enforcement Agency's national Clandestine Laboratory Seizure System (CLSS) documented a large increase in the number of US methamphetamine STLs in the early 2000s as such labs spread quickly from West to East. The CLSS reported 6,777 methamphetamine STL seizures in 1999, increasing to 8,577 in 2001 and 10,015 in 2004 (National Drug Intelligence Center [NDIC], 2005; 2006). Given the widespread geographic increase in the distribution of STLs in the early 2000s and the consequences of domestic methamphetamine production and use, states and the federal government undertook major efforts to restrict access to over-the-counter medications and other products that contain methamphetamine chemical precursors.

O'Connor and her colleagues (O'Connor, Chriqui, & McBride, 2006; O'Connor et al., 2007) documented the wide variety of policy approaches taken by states to restrict access to methamphetamine precursor products. Anecdotal reports and congressional testimony indicated that significant decreases in STL seizures followed the enactment of these precursor policies (Office of National Drug Control Policy [ONDCP], 2006; Rutledge, 2004; Wright, 2004). However, there has not been a comprehensive multi-state quantitative analysis relating enacted state legislation or adopted regulations (hereafter referred to as state policies) with STL seizure rates. The current paper aims to contribute to the literature by investigating two primary research questions. First, is there evidence that STL seizure rates decreased significantly following state and federal policy changes implemented between January 2004 and October 1, 2005? Second, is there evidence that differences exist between states in the relative effectiveness of specific precursor policy environment? This time period, immediately after the implementation of major varying comprehensive policies in many states provided a unique opportunity to

examine changes in STL seizures related to specific policy elements as well as changes in states that did not implement these types of policies.

Methods

Data Sources

Two main data sources were used: (1) state policies related to methamphetamine precursors in effect as of October 1, 2005; and (2) methamphetamine-related STL seizure data from 2004-2006.

State Policy Data

State methamphetamine precursor policies (including statutory and administrative laws) in effect as of October 1, 2005, were obtained by The MayaTech Corporation from Westlaw and state government websites using primary legal research methods (Mersky & Dunn, 2002). A detailed description of the state methamphetamine precursor policy data including data collection methodology can be found elsewhere (O'Connor et al., 2007). The October 1, 2005 reference date was chosen to allow for pre-/post-analyses linking the state policy data with the STL seizure data for 2004 and 2006. Due to resource limitations, we were only able to capture one state policy reference date. The October 1, 2005 date was chosen as it allowed for at least one year of post-implementation-related STL seizure data and at least one year of pre-implementation data in states without such policies prior to this date. Although not ideal from a policy "lagged" effect perspective, one year of post-policy seizure data was considered to be suitable for this study given available anecdotal and documented information from the field describing an almost immediate impact of precursor policies on reductions in STL seizures (ONDCP, 2006; Rutledge, 2004; VanderWaal et al., 2008; Wright, 2004).

State-specific effective dates for all policies were obtained as part of the policy data collection process. In other words, although policy data reflected laws in effect as of October 1, 2005, individual policy provisions identified the specific effective dates when the provisions became effective (see Appendix A for state citations and effective dates). The provision-level effective dates enabled the pre/post policy analyses described below.

STL Seizure Data

Methamphetamine-related STL seizure data for all states from 2004-2006 were obtained from the CLSS housed at the El Paso Intelligence Center (EPIC). CLSS data are based on a voluntary reporting system, and include only those seizures reported to EPIC by contributing agencies. Although reported seizures may not fully reflect total seizures nationwide, a number of steps were taken to ensure, as far as possible, the use of reliable data (see below).

DATA PREPARATION

Working with EPIC personnel, a series of steps were used to organize the CLSS data for analysis. First, ten states were excluded either due to known problems with data reporting or low seizure frequency due to regional location (primarily New England states) where the methamphetamine STL problem did not appear to have yet significantly developed (Connecticut, Delaware, Massachusetts, Maryland, Maine, New Hampshire, New Jersey, Rhode Island, Texas, and Vermont). Second, a comparison of CLSS data with Community Oriented Policing Services (COPS) data was employed in order to evaluate CLSS data reporting quality. COPS data includes counts of the number of times toxic site clean-up funds from COPS are requested by a state. For calendar year 2006, the count of COPS requests per state was compared with the number of seizures reported in the CLSS data. As not every lab seizure would be expected to require clean-up funding, the number of CLSS seizures should approximately meet or exceed the number of COPS clean-up requests per state. Eight states do not primarily rely on COPS data for clean-up, or use COPS grants and thus were not compared (California, Hawaii, Kansas, Kentucky, Maryland, Missouri, North Dakota, and Washington). A minimum threshold of 75% agreement was used, and resulted in exclusion of an additional eight states (Alaska, Louisiana, Minnesota, New Mexico, South Carolina, Tennessee, Utah, and West Virginia). Thus, the following 32 states were retained for analysis because they would provide the most reliable data for comparison of state methamphetamine precursor policies and trends in STL seizures: Alabama, Arizona, Arkansas, California, Colorado, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Mississippi, Missouri, Montana, Nebraska, Nevada, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, South Dakota, Virginia, Washington, Wisconsin, and Wyoming.

Following state selection, CLSS data were sorted by lab capacity and lab type. Seizures of labs with production capacity of 10 pounds per cooking cycle or higher (termed "super labs") were removed. Data were then organized by lab type to ensure that only methamphetamine-related lab seizures were included (anhydrous ammonia, hydriodic acid, ice conversion, methamphetamine, methcathinone [included as it requires the same ephedrine/pseudoephedrine precursors as methamphetamine], P2P/methylamine, tablet extraction, and urine extraction labs) (Amera-Chem, Inc., 2004). A total of 39,923 seizure incidents during 2004 through 2006 in the 32 states remained for analysis.

Next, the coded state precursor policy data were merged with the seizure incident-level CLSS data. An indicator variable was created to identify if a seizure occurred at any point following the relevant state's policy change effective date. The decision to create an "any" lag variable was predicated on the anecdotal evidence indicating

an immediate impact of state laws on reductions in STL seizures as well as evidence from the relationship between other types of drug and substance control policies and behavior change that indicated both immediate and intermediate (3-years or less) impacts on behavior change (Bundy, 2004; Colby, 2004; Fuller, Rieckmann, McCarty, Ringor-Carty, & Kennard, 2006; Levy, 2007; Rutledge, 2004; Wright, 2004). Data were then aggregated into bi-monthly counts of STL seizures per state, resulting in an N of 2,304 (72 cases per state). Each case (i.e., each bi-monthly count of STL seizures per state) was then coded as being pre/post policy implementation. At least 50 percent of the seizures in the relevant bi-monthly time period were required to have occurred after the specific policy was implemented in order to be coded as post-policy implementation.

Constructs and Measures

Outcome Measure

For all analyses, the outcome measure was the bi-monthly count of STL seizures per state (described above). Given the strong positive skew of the measure, analytical models utilized natural log transformation of the original variable (a constant of 1 was added to all cases before conducting the transformation, as some cases had 0 seizures).

Independent Measures: State Policy Types and State Policy Change Date Indicator

Based on initial exploratory models, we chose to focus on four policy areas that were most likely to relate to STL seizure counts: (a) retail transaction quantity restrictions, (b) sales environment restrictions, (c) purchase and possession penalties, and (d) agency responsible for enforcing precursor policies. Individual policies within each of the four areas noted above were then explored for evidence of relationships with STL seizure counts. Results showed that states appeared to enact bundled policy provisions. For example, if a state enacted a policy requiring photo identification (ID) when purchasing products containing pseudoephedrine or ephedrine, it was also likely to require that the precursors be available only behind the counter. After further examining the data, the following state policy types were identified:

Clerk intervention and quantity/packaging restrictions (separate variables for both ephedrine and pseudoephedrine): Clerk intervention was defined as at least one of the following: product located behind counter, buyer signature required in a separate clerk logbook, photo ID required, sales to minors prohibited. Quantity/packaging restrictions were defined as "any" restrictions. These variables were combined to form one four-level ordinal measure: 0=neither clerk intervention nor quantity/packaging restrictions; 1=no clerk intervention, but have quantity/packaging

restrictions; 2=have clerk intervention, but no quantity/packaging restrictions; 3=have both clerk intervention and quantity/packaging restrictions.

Buyer purchase offense severity (separate variables for both ephedrine and pseudoephedrine): 0=non-crime, 1=crime (misdemeanor or felony).

Specification of sales regulatory/enforcement agency: 0=no such specification; 1=agency specified. For example, the policy might state that the state police were responsible for monitoring and enforcing sales violations.

We examined the effective dates by state for the policy types identified above. Some states had pre-existing policies (effective prior to January 2004). Almost all states that enacted policy change between January 2004 and October 1, 2005 did so at a single point in time, most often combining more than one policy type and sometimes specifying the same policy provisions for both pseudoephedrine and ephedrine (only Wisconsin had two separate methamphetamine precursor policy-related effective dates). Because of this complex state policy change environment, it was not possible to meaningfully model differences in individual policy type change dates. Thus, a single dichotomous indicator variable was created identifying each case of bi-monthly seizures as pre- or post-policy change effective date (for Wisconsin, the first policy change date was used; the second effective date occurred only 45 days following the first, and no substantive differences were found based on use of the first or second change date). Cases occurring prior to the effective date were coded as 0, while cases were coded as 1 if at least 50 percent of the seizures occurred following the state policy change effective date.

A 13-level categorical variable was then created to identify states by type of policy change approach (see the Results section for further details). This variable was created to examine the robustness of results for the state policy change indicator across policy environment change types.

Independent Measures: Federal Policy Indicators

O'Connor and colleagues (O'Connor, Chriqui, & McBride, 2006) point out that policy activity directed at limiting access to methamphetamine precursor chemicals has not been limited to the state level. While a variety of historical federal policies have been in place, two specific policy provisions took effect during our study time period (i.e., 2004-2006) that could be expected to relate directly to STL seizure rates in the current models. These policies were both included in the Combat Methamphetamine Epidemic Act (Combat Methamphetamine Epidemic Act , 2006) (see Appendix A for citation information and effective dates for both state and federal policies):

Federal purchase quantity limits: 0=prior to policy; 1=restrictions for non-liquid pseudoephedrine sold to individuals (effective April 8, 2006).

Federal clerk intervention requirement: 0=prior to policy; 1=requirements to place methamphetamine precursor products behind the counter or in locked cabinets at the point of sale, photo ID, retailer logbook of all sales, and staff training (effective September 30, 2006).

It is important to note that federal policy did not preempt more restrictive state policies. However, in recognition of the possible impact of federal laws on the relationship between state methamphetamine precursor laws/regulations and STL seizures, analytical models included indicators variables for both federal provisions (based on their effective dates) identified above. Clearly, only a very small number of cases in the current study occurred following the federal clerk intervention requirement. Thus, models controlled for the federal clerk intervention policy change indicator, but results will not be reported because estimates are not expected to be suitably reliable. In contrast, as 24 percent of cases in the current study occurred following the implementation of the federal purchase quantity limits (see Table 1), obtained estimates will be reported for this policy measure.

Analytical Models

Given the panel nature of the data and the pre-existing trend in STL seizures, analyses were conducted using Stata v10.1 and specifying xtregar to fit random effects cross-sectional time-series regression models with a first-order autoregressive disturbance using the GLS estimator (StataCorp LP, 2007). Analyses to answer the first research question (looking for evidence that STL seizure rates decreased significantly following state and federal policy changes) were modeled using variations of the following equation:

$$\log(y_{it}) = \beta_0 + \beta_1 \text{state change}_{it} + \beta_2 \text{federal change A}_t + \beta_3 \text{federal change B}_t + \sum_{n=4}^{35} \beta_n \text{STATE FE} + v_i + \epsilon_{it}$$

where y = the number of seizures for state i at time t; υ is the state-specific residual, and ε is the first-order autoregressive disturbance term ($\epsilon_{it} = \rho\epsilon_{i,t-1} + \eta_{it}$). Models were estimated in the following order: Model 1 included only the state policy change indicator; Model 2 added both federal policy change indicators; Model 3 added state fixed effects. A second series of analyses were then estimated using Model 3 but grouping by state policy bundle type (i.e., testing to see if the policy change indicators remain significant across policy bundle types). Following this, all models were again estimated restricting the data to include only time periods occurring prior to October 1, 2005, in order to avoid time periods during which additional state policies may have been implemented but which were not captured due to the October 1, 2005 state policy data collection cut-off (these models necessarily did not include federal policies, which had not yet been implemented).

Analyses to answer the second research question (if differences existed between states in the relative effectiveness of specific precursor policy environment) were estimated using a similar equation to that specified above (Model 3) but substituting the following sets of policy environment predictors for the dichotomous state change indicator: (a) ephedrine clerk intervention and quantity packaging restrictions, ephedrine buyer purchase offense severity, regulatory/enforcement agency specification; or (b) pseudoephedrine clerk intervention and quantity packaging restrictions, pseudoephedrine buyer purchase offense severity, regulatory/enforcement agency specification.

RESULTS

As noted previously, a total of 2,304 cases representing bi-monthly seizure counts for 32 states were included in analyses. Table 1 indicates that over the 2004-2006 period of study, the mean number of seizures per bi-monthly time period was 17.3 (overall standard deviation (*SD*) 24.4), with a range of 0 to 213. Both between- and within-state variance were significantly greater than zero ($SD_{between}$=20.4; SD_{within}=13.8); indicating that seizure rates differed strongly both between states and within states over time. This is presented graphically in Figures 1 and 2. Figure 1 shows that, for all states, STL bi-monthly seizure counts dropped from a high of 1,117 in early 2004 to 212 at the end of December 2006. The strong decreasing trend is likely attributable to a variety of factors including social trends and pre-existing policy differences. Analyses discussed below investigated if policy changes implemented during the study time period contributed significantly to seizure rate trends.

Figure 2 shows the strong differences in STL seizure rates between those states with and without any state methamphetamine precursor policy changes during the time period of the current study. As noted in the Introduction, STL manufacture of methamphetamine has experienced significant geographic variance. It is important to note that public safety and health consequences often precede (and result in) legislative action. Figure 2 shows that states with methamphetamine precursor policy changes had significantly higher levels of STL seizures. At least in the case of methamphetamine precursor policy, change appears to have been driven by the need to address existing problems related to STL methamphetamine manufacture (vs. implementing policy as a purely preventive measure).

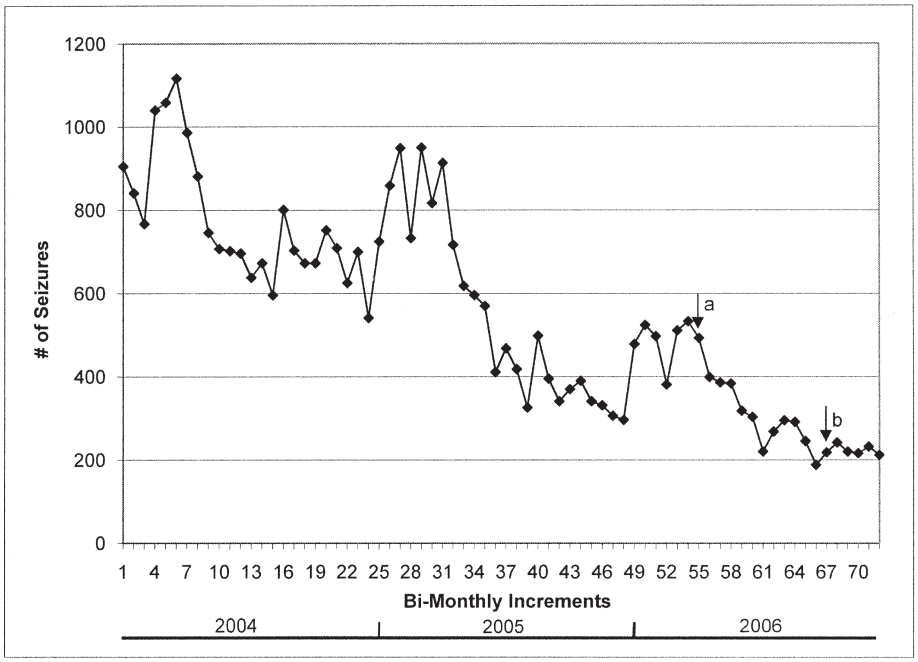
The overall distribution of cases by policy change date indicator can be found in Table 1. Thirty-nine percent of cases occurred following the first or only state policy change effective date (between January 2004 and October 1, 2005). As noted previously, Wisconsin was the only state to have a second policy change effective date (only 2% of cases occurred following this date). Twenty-four percent of cases occurred following the effective date of federal purchase quantity limits on non-

Table 1. Descriptives

	% or Mean	Range
Bi-monthly methamphetamine-related STL seizures[a]	17.33	0 - 213
First state policy change indicator		
Time period occurring prior to state policy change	61.5	
Time period occurring after state policy change	38.5	
Second state policy change indicator		
Time period occurring prior to state policy change	98.4	
Time period occurring after state policy change	1.6	
Federal policy change indicators		
1. Purchase quantity limits[b]		
Time period occurring prior to policy change	76.4	
Time period occurring after policy change	23.6	
2. Clerk intervention[c]		
Time period occurring prior to policy change	91.7	
Time period occurring state policy change	8.3	
State ephedrine policy environment status (time period occurring in the following environment)		
1. Clerk intervention and quantity/packaging restrictions[d]		
Neither clerk intervention nor quantity/packaging restrictions	64.3	
No clerk intervention, but do have quantity/packaging restrictions	11.2	
Have clerk intervention, but no quantity/packaging restrictions	4.1	
Have both clerk intervention and quantity/packaging restrictions	20.4	
2. Purchase severity		
Non-crime	77.3	
Crime (misdemeanor or felony)	22.7	
State pseudoephedrine policy environment status (time period occurring in the following environment)		
1. Clerk intervention and quantity/packaging restrictions		
Neither clerk intervention nor quantity/packaging restrictions	55.3	
No clerk intervention, but do have quantity/packaging restrictions	12.7	
Have clerk intervention, but no quantity/packaging restrictions	4.1	
Have both clerk intervention and quantity/packaging restrictions	28.0	
2. Purchase severity		
Non-crime	77.2	
Crime (misdemeanor or felony)	22.8	
State specification of regulatory/enforcement agency		
Time period occurring in environment without agency specification	68.8	
Time period occurring in environment with agency specification	31.2	

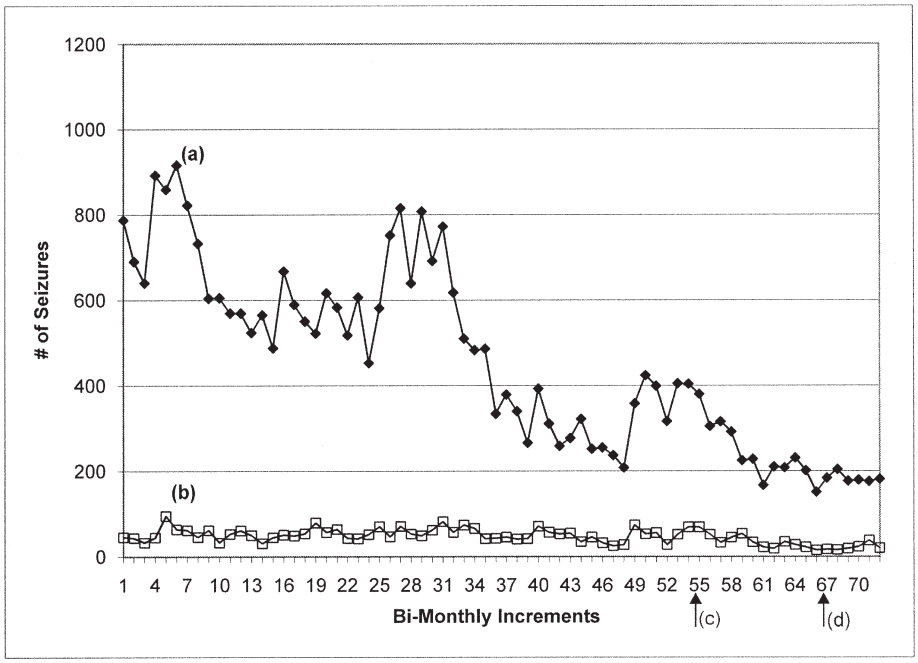
Notes. N=2,304. Each case in the data represents one bi-monthly time period of seizure counts per state.
Percentages for the policy environment status categories include both cases in states which did not change policy status during 2004–2006, or which were either pre- or post-policy change.
[a] Bi-monthly counts of small toxic labs (STLs) per state.
[b] Restrictions for non-liquid pseudoephedrine sold to individuals.
[c] Requirements to place methamphetamine precursor products behind counter or in locked cabinet at point of sale, picture ID required, and retailer logbook of sales and staff training.
[d] Clerk intervention defined as at least one of the following: behind counter, signature required, ID required, sales to minors prohibited. Quantity/packaging restrictions defined as any restrictions.

FIGURE 1. TOTAL METHAMPHETAMINE-RELATED SMALL TOXIC LAB SEIZURES IN 32 RETAINED STATES, 2004-2006



Notes. (a) Effective date of federal quantity restrictions for non-liquid pseudoephedrine sold to individuals.
(b) Effective date of federal restrictions requiring methamphetamine precursor products to be placed behind the counter or in a locked cabinet prior to sale. Further, buyers must present picture identification at time of purchase, and retailers must maintain logbook of sales and provide training to staff.

Figure 2. Total Methamphetamine-Related Small Toxic Lab Seizures from 2004-2006 in Retained States with No State Precursor Policies (as of October 1, 2005) versus States with Policies becoming Effective between January 1, 2004 and October 1, 2005



Notes. Arkansas and California had some/all of the investigated policies, but their policies did not change prior to the cut-off date of 10/1/2005. Thus, they are excluded from the data presented.
(a) States with state pseudoephedrine precursor policies becoming effective between 1/1/2004–10/1/2005 include Alabama, Arizona, Colorado, Florida, Georgia, Hawaii, Illinois, Indiana, Iowa, Kansas, Kentucky, Missouri, Montana, Mississippi, Nebraska, North Carolina, North Dakota, Oklahoma, Oregon, South Dakota, Washington, Wisconsin, Wyoming. *N*=1,455.
(b) States with no state pseudoephedrine precursor policies as of October 1, 2005, include Idaho, Michigan, Nevada, New York, Ohio, Pennsylvania, Virginia. *N*=411.
(c) Effective date of federal quantity restrictions for non-liquid pseudoephedrine sold to individuals.
(d) Effective date of federal restrictions requiring methamphetamine precursor products to be placed behind the counter or in a locked cabinet prior to sale. Further, buyers must present picture identification at time of purchase, and retailers must maintain logbook of sales and provide training to staff.

liquid pseudoephedrine sold to individuals, and eight percent occurred following the effective date of federal clerk intervention policy.

Table 2 presents the types of state policy changes grouped in change type bundles that were observed in the current study, as well as showing the mean seizures and number of states associated with each bundle group. Seven states had no pre-existing policies and did not implement any prior to October 1, 2005. Two states (California and Arizona) had pre-existing policies, but did not change or add policies between

TABLE 2. STATE METHAMPHETAMINE PRECURSOR POLICY CHANGE GROUPINGS, 2004–2006

	# of States	% of Cases	Mean Seizures
No changes and no pre-existing policies (ID, MI, NV, NY, OH, PA, VA)	7	21.9	6.8
No changes; pre-existing policies (AR, CA)	2	6.3	26.7
PE clerk/quantity[a] policy changes (NE, OK)	2	6.3	14.3
Enforcement[b] policy changes (OR)	1	3.1	10.1
PE/E clerk/quantity policy changes (FL, IL, KY, WA)	4	12.5	28.5
PE clerk/quantity; enforcement policy changes (GA, HI, IA)	3	9.4	18.3
E clerk/quantity; enforcement policy changes (KS)	1	3.1	19.8
PE/E clerk/quantity; enforcement policy changes (IN, ND, WY)	3	9.4	18.5
PE clerk/quantity; PE severity[c]; enforcement policy changes (WI)	1	3.1	3.0
PE/E clerk/quantity; E severity policy changes (CO)	1	3.1	9.9
PE/E clerk/quantity; PE/E severity policy changes (AZ, MO, MT, NC, SD)	5	15.6	25.3
Changes in all noted policies (AL, MS)	2	6.3	15.9

Notes. PE = pseudoephedrine; E = ephedrine.
[a] Clerk/quantity: policy focused on some combination of clerk intervention (defined as at least one of the following: behind counter, signature required, ID required, sales to minors prohibited) and/or quantity/packaging restrictions (defined as any restrictions).
[b] Enforcement: state specification of regulatory/enforcement agency
[c] Severity: buyer purchase offense severity (non-crime vs. misdemeanor/felony)

January 2004 and October 1, 2005. Two additional states (Alabama and Mississippi) implemented changes in all included policies between January 2004 and October 1, 2005. The remaining 21 states implemented a change in at least one but not all of the precursor policies between January 2004 and October 1, 2005. It is important to note that some of these states had at least one implemented policy prior to January 2004.

The overall distribution of cases by the type of state policy environment can be found in Table 1. Over half of all cases occurred when a state had neither clerk intervention nor quantity/packaging restrictions for either ephedrine (64%) or pseudoephedrine (55%) by the October 1, 2005 state policy cut-off date. Just over 10 percent of cases occurred in a policy environment where quantity/packaging restrictions were in place without clerk intervention (11% for ephedrine; 13% for pseudoephedrine); very few cases occurred in policy environments where clerk intervention was in place but not quantity/packaging restrictions (4% for both ephedrine and pseudoephedrine). A higher percentage of cases occurred in policy environments where both clerk intervention and quantity/packaging restrictions were in place for pseudoephedrine (28%) than ephedrine (20%). Approximately 23 percent of cases occurred in policy environments where the penalty for purchasing pseudoephedrine or ephedrine was classified as a crime (either misdemeanor or felony). Finally, 31 percent of cases occurred where states had specified an agency for regulatory/enforcement activities regarding methamphetamine precursor sales.

Table 3. Time Series Regression Results for Differences in Methamphetamine Small Toxic Lab Seizure Rates by Any Policy Change, 2004–2006

	Model 1		Model 2		Model 3	
	Coeff.	*p*	*Coeff.*	*p*	*Coeff.*	*p*
First state policy change indicator						
Time period occurring prior to state policy change	(ref)		(ref)		(ref)	
Time period occurring after state policy change	-0.8622	***	-0.6558	***	-0.6612	***
Federal purchase quantity limits[a]						
Time period occurring prior to policy change			(ref)		(ref)	
Time period occurring after policy change			-0.4043	***	-0.4021	***
R^2						
Within	0.283		0.359		0.359	
Between	0.045		0.045		1.000	
Overall	0.022		0.053		0.813	
ρ_{ar}	0.379		0.304		0.304	
σ_u	1.104		1.090		0.000	
σ_e	0.567		0.553		0.536	
ρ_{fov}	0.791		0.795		0.000	

Notes. *N* of states = 32; *N* of time periods per state = 72. Total observations = 2,304. Outcome is the natural log of bi-monthly counts of STL seizures, with a constant of 1 added to all cases. Model 1: Bivariate model (state policy change indicator only). Model 2: State and federal policy change indicators (estimates for federal clerk intervention not reported). Model 3: State and federal policy change indicators, state fixed effects (estimates for federal clerk intervention and state fixed effects not reported).
***$p<.001$
[a] Restrictions for non-liquid pseudoephedrine sold to individuals.
ρ_{ar}: Estimated autocorrelation coefficient.
σ_u: State-level standard deviation (between states)
σ_e: Standard deviation of bi-monthly time periods (within states)
ρ_{fov}: Fraction of variance between states

Pre- and Post-Precursor Policy STL Seizure Rate Changes

Table 3 shows results of models examining rates of STL seizures for all 32 included states by both state and federal precursor policy implementation indicators. Rates of STL seizures decreased significantly following state policy change implementation, and this decrease was significant after controlling for both federal policy implementation as well as state fixed effects (see results for Model 3). Results also show that the federal purchase quantity policy implementation date was also independently associated with decreased seizure rates both before and after controlling for state fixed effects (see results for Model 3). When analyses were re-estimated restricting the sample to only cases occurring prior to the October 1, 2005 policy coding cut-off date, the direction and significance level of results for both state and federal policy change indicators did not change (results not shown).

Table 4 presents results of analyses seeking to explore if the significance of the state policy change date was robust across different state policy change approaches.

TABLE 4. TIME SERIES REGRESSION RESULTS FOR DIFFERENCES IN METHAMPHETAMINE SMALL TOXIC LAB SEIZURE RATES BY ANY STATE POLICY CHANGE, MODELED SEPARATELY BY POLICY CHANGE BUNDLE, 2004–2006

	Policy Change Setting: A		B		C		D		E	
	Coeff.	*p*	*Coeff.*	*p*	*Coeff.*	*p*	*Coeff.*	*p*	*Coeff.*	*p*
First state policy change indicator										
Prior to policy change					(ref)		(ref)		(ref)	
After policy change					-1.2780	***	-0.6900	***	-0.5108	***
Federal purchase quantity limits[a]										
Prior to policy change	(ref)		(ref)		(ref)		(ref)		(ref)	
After policy change	-0.3846	***	-0.4373	*	-0.7594	***	-0.2614		-0.4825	***
N										
States	7		2		2		3		4	
Total observations	504		144		144		216		288	
R^2										
Within	0.108		0.388		0.673		0.413		0.487	
Between	1.000		1.000		1.000		1.000		1.000	
Overall	0.626		0.413		0.724		0.879		0.658	
ρ_{ar}	0.160		0.611		0.296		0.494		0.492	
σ_u	0.000		0.000		0.000		0.000		0.000	
σ_e	0.629		0.361		0.508		0.446		0.397	
ρ_{fov}	0.000		0.000		0.000		0.000		0.000	

	F		G		H		I	
	Coeff.	*p*	*Coeff.*	*p*	*Coeff.*	*p*	*Coeff.*	*p*
First state policy change indicator								
Prior to policy change	(ref)		(ref)		(ref)		(ref)	
After policy change	-0.6551	***	-0.5865	***	-0.7944	***	-0.7335	***
Federal purchase quantity limits[a]								
Prior to policy change	(ref)		(ref)		(ref)		(ref)	
After policy change	-0.2696		-0.2199	*	-0.2682		-0.6086	***
N								
States	3		5		2		4	
Total observations	216		360		144		288	
R^2								
Within	0.397		0.371		0.344		0.493	
Between	1.000		1.000		1.000		1.000	
Overall	0.889		0.898		0.396		0.658	
ρ_{ar}	0.346		0.119		0.366		0.176	
σ_u	0.000		0.000		0.000		0.000	
σ_e	0.501		0.502		0.519		0.594	
ρ_{fov}	0.000		0.000		0.000		0.000	

See page 268 for Table 4 notes.

Table 4. Time Series Regression Results for Differences in Methamphetamine Small Toxic Lab Seizure Rates by Any State Policy Change, Modeled Separately by Policy Change Bundle, 2004–2006 (continued)

Notes: All models controlling for federal clerk intervention change indicator and state fixed effects (results not reported). Outcome is the natural log of bi-monthly counts of STL seizures, with a constant of 1 added to all cases.

A. No changes; no pre-existing policies
B. No changes; pre-existing policies
C. Pseudoephedrine clerk intervention and quantity/packaging restriction policy change
D. Pseudoephedrine clerk intervention and quantity/packaging restriction policy change; specification of regulatory/enforcement agency policy change
E. Pseudoephedrine and ephedrine clerk intervention and quantity/packaging restriction policy change
F. Pseudoephedrine and ephedrine clerk intervention and quantity/packaging restriction changes; specification of regulatory/enforcement agency policy change
G. Pseudoephedrine and ephedrine clerk intervention and quantity/packaging restriction change; pseudoephedrine and ephedrine purchase severity policy change
H. Changes in all noted policies
I. Category includes 4 states, each of which was the only state to implement their specific type of policy change. Policy changes included:
(1) specification of regulatory/enforcement agency;
(2) pseudoephedrine clerk intervention and quantity/packaging restriction; pseudoepherine purchase severity; specification of regulatory/enforcement agency;
(3) pseudoephedrine and ephedrine clerk intervention and quantity/packaging restriction; ephedrine purchase severity;
(4) ephedrine clerk intervention and quantity/packaging restriction; specification of regulatory/enforcement agency

*p<.05; **p<.01; ***p<,001
a Restrictions for non-liquid pseudoephedrine sold to individuals.
ρar: Estimated autocorrelation coefficient.
σu: State-level standard deviation (between states)
σe: Standard deviation of bi-monthly time periods (within states)
ρfov: Fraction of variance between states

TABLE 5. BETWEEN-STATE DIFFERENCES IN METHAMPHETAMINE-RELATED SMALL TOXIC LAB SEIZURE RATES BY SPECIFIC PRECURSOR POLICY ENVIRONMENTS, 2004–2006

	Ephedrine		Pseudoephedrine	
	Coeff.	*p*	*Coeff.*	*p*
Precursor-specific policy environment status[a]				
(time period occurring in the following environment)				
1. Clerk intervention and quantity/packaging restrictions				
Neither clerk intervention nor quantity/packaging restrictions	(ref)		(ref)	
No clerk intervention, but do have quantity/packaging restrictions	-0.3584	**	-0.3517	***
Have clerk intervention, but no quantity/packaging restrictions	-0.3588	**	-0.4307	**
Have both clerk intervention and quantity/packaging restrictions	-0.3242	***	-0.5766	***
2. Purchase severity				
Non-crime	(ref)		(ref)	
Crime (misdemeanor or felony)	-0.0767		0.0912	
State specification of regulatory/enforcement agency				
Time period occurring in environment without agency specification	(ref)		(ref)	
Time period occurring in environment with agency specification	-0.4717	***	-0.2956	***
Federal purchase quantity limits[b]				
Time period occurring prior to policy change	(ref)		(ref)	
Time period occurring after policy change	-0.4742	***	-0.4355	***
N				
States	32		32	
Total observations	2,304		2,304	
R^2				
Within	0.322		0.340	
Between	1.000		1.000	
Overall	0.802		0.807	
ρ_{ar}	0.343		0.327	
σ_u	0.000		0.000	
σ_e	0.544		0.540	
ρ_{fov}	0.000		0.000	

Notes. All models controlling for federal clerk intervention change indicator and state fixed effects (results not reported).
Outcome is the natural log of bi-monthly counts of STL seizures, with a constant of 1 added to all cases.
*p<.05; **p<.01; ***p<,001
[a] Policies specific to either ephedrine or pseudoephedrine
[b] Restrictions for non-liquid pseudoephedrine sold to individuals.
ρ_{ar}: Estimated autocorrelation coefficient.
σ_u: State-level standard deviation (between states)
σ_e: Standard deviation of bi-monthly time periods (within states)
ρ_{fov}: Fraction of variance between states

Separate models were estimated for all policy change environments in which at least two states utilized the same change bundle. As single-state models cannot be estimated using a cross-sectional time series model, the four states that implemented unique policy change approaches were combined in one model. Results show that regardless of the state policy change bundle, STL seizure rates decreased significantly following state policy change implementation. Analyses were re-estimated in models restricting the sample to only cases occurring prior to the October 1, 2005 policy cut-off date. While the significance level for Policy Bundle E dropped from $p<.001$ to $p<.01$ in these models, the direction and significance level of all other results did not change.

Table 4 shows that the significance of the implementation of federal policy did vary across the different state policy groupings. Implementation of federal quantity restrictions were not related to seizure rates in the following state groups: (1) three states implementing changes in pseudoephedrine clerk intervention and quantity/packaging restrictions, as well as specification of regulatory/enforcement agency; (2) three states implementing changes in pseudoephedrine and ephedrine clerk intervention and quantity/packaging restrictions, as well as specification of regulatory/enforcement agency; (3) two states implementing changes in all noted policies.

Between-State Differences in STL Seizure Rates by Policy Environment

The results of the analyses presented above indicate that statistically significant reductions in STL seizures occurred following the implementation of policies directed at controlling access to products containing the methamphetamine precursor chemicals ephedrine and pseudoephedrine. We now turn to focusing on between-state differences in STL seizure rates by overall policy environment with models controlling for the *a priori* highly significant differences in STL seizure rates between states. Results of these analyses are presented in Table 5.

States with any type of clerk intervention or quantity/packaging restrictions showed lower rates of STL seizures than did states without such policies (for both ephedrine and pseudoephedrine). While the specific clerk intervention approach taken for ephedrine did not appear to significantly relate to seizure rates, the same was not true for pseudoephedrine. STL seizure rates were higher in states with pseudoephedrine quantity/packaging restrictions only compared to states with quantity/packaging restrictions combined with clerk intervention provisions (*coefficient* 0.2249; $p<.05$; data not shown). No difference in seizure levels between states was observed based on whether or not the state had criminal penalties for purchasing violations of either ephedrine or pseudoephedrine precursor policies. However, STL seizure rates were significantly lower in states that specified an

agency for regulatory/enforcement responsibilities. Federal policy implementation continued to be related to decreased STL seizures.

Discussion

In the last few decades, there has been considerable discussion regarding the specific roles of federal and state governments in establishing policy related to the public's health, including policy related to substance use. Some perceive that such policy is exclusively a federal affair, while others believe state governments should be the main actors in such policy development. One area in which both states and the federal government have had significant recent policy development activity deals with reducing the significant criminal justice and public-health concerns resulting from STL methamphetamine production and use.

The data documents that states took a wide variety of approaches toward reducing access to the methamphetamine precursor chemicals ephedrine and pseudoephedrine. From January 1, 2004 through October 1, 2005, 72 percent (23) of the 32 states included in the current study implemented some type of change in policy focusing on either (a) controlling the quantity of ephedrine/ pseudoephedrine-containing product sales, (b) the required form (if any) of clerk intervention at the point of purchase, (c) the definition of precursor policy purchasing violations as a crime, or (d) specifying a regulatory agency to oversee enforcement of the state's policy. All of the state policy changes noted above occurred prior to changes in federal policy specifying non-liquid pseudoephedrine quantity limits as well as defining methamphetamine precursor chemical clerk intervention policies. Such variance over time allowed us to develop models aimed at examining pre/post policy changes in methamphetamine STL seizures, as well as comparisons of STL seizure rates between methamphetamine precursor policies.

This paper set out to examine two research questions: (1) Is there evidence that STL seizure rates decreased significantly following state and federal policy changes implemented between January 2004 and October 1, 2005? (2) Is there evidence that differences exist between states by type of specific methamphetamine precursor policy environment? The results from the analyses indicate that the answers to both research questions are affirmative. STL seizure rates decreased significantly following state and federal policy change effective dates, both overall and across different state policy change groups. This consistent decline in methamphetamine STL seizures soon after the implementation of state and federal precursor policies is a finding consistent with media reports (Associated Press, 2006), qualitative research (VanderWaal et al., 2008), and conclusions by the U.S. Department of Justice (NDIC, 2005).

Results also indicated that some state policies related strongly to decreases in STL seizures (clerk intervention and quantity/packaging restrictions; specification

of a regulatory/enforcement agency) while others (purchase penalty severity) did not. As discussed in the introduction, there is literature that indicates a decrease in STL seizures after the implementation of general policies attempting to limit access to methamphetamine precursor chemicals. However, little research has focused on specific policy elements. In this paper, within-state analyses found that states which restricted the quantity of ephedrine/pseudoephedrine sales, or required some form of clerk intervention, were more likely to report significant reductions in STL seizures following policy implementation. This suggests that restricting precursor chemicals via quantity restrictions likely relates to less availability, which in turn relates to a reduced ability to manufacture methamphetamine in STLs. In pseudoephedrine models, combining quantity restrictions with the requirement for some type of clerk intervention (requiring photo ID or locating the product behind the counter) was associated with significantly reduced STL seizures compared with quantity/packaging restrictions alone. This finding suggests that for pseudoephedrine--the substance with higher direct consumer access in the local retail environment--clerk intervention plays a key role in reducing access for STL manufacturers.

One of the policies examined in quantitative models was whether or not states identified an agency that was responsible for enforcing/regulating enacted methamphetamine precursor policies. As of October 1, 2005, only 11 of the 32 retained states' policies identified a regulatory agency responsible for enforcement and implementation. Identification of an agency to oversee the implementation of their methamphetamine precursor sales policies was associated with significant reductions in STL seizures. The data suggest it may not be sufficient merely to enact policies that restrict access to dangerous chemicals; mechanisms for reporting violations and regulating compliance must also be in place. There is some indication in the media (Bovett, November 16, 2010:A31) and in discussions with law enforcement, that due to the lack of precursor sales tracking in many states, "smurfing" (users going from store to store and buying the limit of pseudoephedrine in each store) continues at a relatively high rate.

One of the most common policies used in attempts to reduce the production, distribution or use of illegal drugs involves the enactment of severe criminal penalties. This approach is based on classic deterrence theory that argues that if penalties are sufficiently severe, the behavior will be less likely to occur (Mendes & McDonald, 2001). However, results show that, controlling for the relative impact of other policies, criminal penalties for purchase were not associated with significantly reduced STL seizure rates. This may suggest that, at least in regards to STL seizures, penalty policies for purchase do not appear to have as much of a deterrent effect on STL rates as do policies restricting and enforcing access to ephedrine/pseudoephedrine.

Perhaps one of the most important findings in the current paper is that, overall, both state and federal policies matter. In almost all of the analytical models, significant decreases in STL seizure rates were associated with the implementation date of the federal policy focusing on non-liquid pseudoephedrine quantity limits after controlling for state policy. Alternately, the implementation date of state precursor policy changes was also associated with decreases in STL seizure rates after controlling for federal policy. It is important to remind readers that changes in state policy occurring after October 1, 2005, were not included in analytical models. Thus, it is possible that findings related to federal policy may, in some way, be associated with unmeasured state policy changes. However, the data indicate that both federal and state policies are an important part of a comprehensive approach directed at reducing the consequences and harms associated with illicit drug production and use. Federal law may help prevent the purchasing of large quantities of precursor chemicals in one state and then, following transporting of the materials across state lines, manufacturing methamphetamine in states with existing precursor policies. Further, while federal law was less stringent that some state policies, it may have also provided an important minimum purchasing standard and penalties for states that had not yet enacted any precursor laws.

The analyses presented in this paper suggest that both the states and the federal government took a measured and complex approach to reducing STL methamphetamine production. Purchase quantity controls, combined with clerk intervention and having a regulatory agency responsible for policy implementation and monitoring of purchases, consistently related to reductions in STL lab seizures in both within- and between-state analyses. These data suggest that there is not a simple approach to addressing an issue such as the domestic production of methamphetamine in STLs. However, a combination of policies appears to have related to significant reductions in the domestic STL production of methamphetamine. It remains to be seen if this reduction in STL labs is related to a reduction in methamphetamine use, quality, or purity (Royal Canadian Mounted Police, 2001). Further, it is unknown if these observed policy relationships will continue over time or if STL operators will eventually resume prior production levels. Such an increase might well occur if resources are not available to continue active efforts to reduce STL production, or if existing policies are not enforced through a regulatory agency using an integrated data system capable of recording and tracking precursor purchases.

The findings of this study should be considered within their limitations. The source for the outcome measure for these analyses is the CLSS data which, as noted previously, are voluntarily reported data. Thus, CLSS data are not necessarily reported with equal accuracy across states or within states across time. However, the CLSS data remain the only extant data source on US illicit drug laboratory seizures,

and are a primary source of information for the US Department of Justice (Dobkin & Nicosia, 2009). As the authors worked closely with EPIC personnel and COPS comparisons to include only those states with the highest data quality, the resulting data is believed to be the best currently available. Readers should also recognize that the analyses focused only on how the examined policies relate to STL seizure reductions. Analyses examining how such policies relate to the prevalence of methamphetamine use in the community, or to reductions in costs borne by local, state, and federal governments resulting from STL clean-up efforts and/or hospital and treatment costs, were not within the scope of these analyses. It is also important to note that Dobkin and Nicosia (2009) indicated that methamphetamine markets have tended to recover fairly rapidly from attempts to interrupt supply. This may suggest the continued importance of further policy developments to address changing production markets. For example, recent epidemiological evidence indicates a shift in local methamphetamine production to what is known as the "one pot" or "shake and bake" method. This method involves smaller laboratories and lessened amounts of precursors (and smaller quantities of produced methamphetamine) thereby lessening the likelihood of detection (National Institute on Drug Abuse, 2010). Further, state policies enacted and effective after the October 1, 2005 policy cut-off date were beyond the scope the analyses, but would prove important in future research as would analyses of longer-term impacts of the policies on reductions in STL seizures.

Small toxic labs present significant environmental and health-related dangers and costs to communities. Data presented in this paper indicate that many states have developed policies that do, indeed, appear to have related to rapid and significant declines in the production of methamphetamine in STLs. The data also suggest that a comprehensive federal and state approach that includes designated regulatory agencies that can enforce precursor policies focusing on quantity controls, clerk intervention, and a regulatory system than monitors precursor chemical purchases are crucial policy elements in efforts to reduce the number of STLs that manufacture methamphetamine in the US and their associated harms.

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APPENDIX. FEDERAL AND RETAINED STATE PRECURSOR POLICY ENACTMENT AND EFFECTIVE DATES

	Date Enacted	Date Effective	Legal Citation
Federal	03/09/2006	04/08/2006	21 U.S.C. § 802(42)(A) (2006)
	03/09/2006	09/30/2006	21 U.S.C. § 830(e)(1)(A)(ii) (2006)
State			
Alabama	05/20/2004; 05/24/2005	05/20/2004; 07/01/2005	ALA. CODE § 20-2-190
	05/20/2004	05/20/2004	ALA. CODE § 20-2-190 (e)
Arizona	05/20/2005	08/12/2005; 10/31/2005	ARIZ. REV. STAT. ANN. § 13-3404.01
Arkansas	03/30/2001	03/30/2001	ARK. CODE ANN. § 5-64-1103 ARK. CODE ANN. § 5-64-1103 (b)
California	10/10/1999	01/01/2000	CAL. HLTH. & S. CODE § 11100
Colorado	06/07/2002	10/01/2002	COLO. REV. STAT. ANN § 18-18-402
	05/27/2005	07/01/2005	COLO. REV. STAT. ANN § 18-18-412.8
Florida	06/01/2005	07/01/2005	FLA. STAT. ANN. § 893.1495
Georgia	04/19/2005	07/01/2005	GA. CODE ANN. § 16039-30.4 GA. CODE ANN. § 16-13-30.3(b.1)(2) GA. CODE ANN. § 16-13-30.3(b.1)(4) GA. CODE ANN. § 16-13-30.3(b.1)(6)(B)
Hawaii	07/05/2005	07/01/2005	HAW. REV. STAT. § 329-71 2005 Hawaii Laws Act 193
Idaho	- none -		
Illinois	08/24/2004	01/01/2005	720 ILL. COMP. STAT. ANN. 647/10 720 ILL. COMP. STAT. ANN. 647/15 720 ILL. COMP. STAT. ANN. 647/35
Indiana	05/10/2005	07/01/2005	IND. CODE ANN. § 35-48-4-14.7
Iowa	03/22/2005	05/21/2005	IOWA CODE § 124.212 IOWA CODE § 124.401 IOWA CODE § 126.23A IOWA CODE § 126.23B IOWA CODE § 126.23B(1)
Kansas	04/15/2005	06/01/2005	KAN. STAT. ANN. § 65-1643
	05/13/1999	05/13/1999	KAN. STAT. ANN. § 65-7006
Kentucky	04/02/2002	07/15/2002	KY. STAT. ANN. § 218A.1438
	03/18/2005	06/20/2005	KY. STAT. ANN. § 218A.1446
Michigan	- none -		
Mississippi	07/01/2005	07/01/2005	MISS. CODE ANN. § 41-29-139 MISS. CODE ANN. § 41-29-315
Missouri	06/15/2005	06/15/2005	MO. REV. STAT. § 195.017 MO. REV. STAT. § 195.417
Montana	05/02/2005	07/01/2005	MONT. CODE ANN. § 50-32-502
Nebraska	05/31/2005	09/04/2005	NEB. REV. STAT. § 28-456 NEB. REV. STAT. § 28-456(1)(e)
Nevada	- none -		
New York	- none -		
North Carolina	09/27/2005	09/27/2005	N.C. GEN. STAT. § 90-113-52 N.C. GEN. STAT. § 90-113-53 N.C. GEN. STAT. § 90-113-56
North Dakota	04/22/2005	06/01/2005	N.D. CENT. CODE § 19-03.4-08 N.D. CENT. CODE § 19-03.4-08(3)(b)
Ohio	- none -		

Appendix. Federal and Retained State Precursor Policy Enactment and Effective Dates (continued)

Oklahoma	06/10/1996	06/10/1996	OKLA. STAT. ANN. tit.63, § 2-101, 201
	05/22/2002	07/01/2002	OKLA. STAT. ANN. tit.63, § 2-333
	04/06/2004	04/06/2004	OKLA. STAT. ANN. tit.63, § 2-212(b)
Oregon	06/26/2001; 08/16/2005	01/01/2002; 08/16/2005	OR. REV. STAT. § 475.973
Pennsylvania	- none -		
South Dakota	02/25/2005	07/01/2005	S.D. CODIFIED LAWS ANN. § 34-20D-1 S.D. CODIFIED LAWS ANN. § 34-20D-3
Virginia	- none -		
Washington	05/11/2005	10/01/2005	WASH. REV. CODE ANN. § 69.43.105
Wisconsin	05/06/2005	05/07/2005	WIS. STAT. ANN. § 961.11
	06/07/2005	06/21/2005	WIS. STAT. ANN. § 961.23 WIS. STAT. ANN. § 961.41
Wyoming	03/15/2005	07/01/2005	WYO. STAT. ANN. § 35-7-1059(g) WYO. STAT. ANN. § 35-7-1059(j) WYO. STAT. ANN. § 35-7-1059(k) WYO. STAT. ANN. § 35-7-1059(m)

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